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GEOGRAPHIC SCHOOL BULLETINS

Published Weekly by

THE NATIONAL GEOGRAPHIC SOCIETY

(The National Geographic Society is a scientific and educational Society, wholly altruistic, incorporated as a non-commercial institution for the increase of geographic knowledge and its popular diffusion. General Headquarters, Washington, D. C.)

January 31, 1944. Vol. XXII. No. 28.

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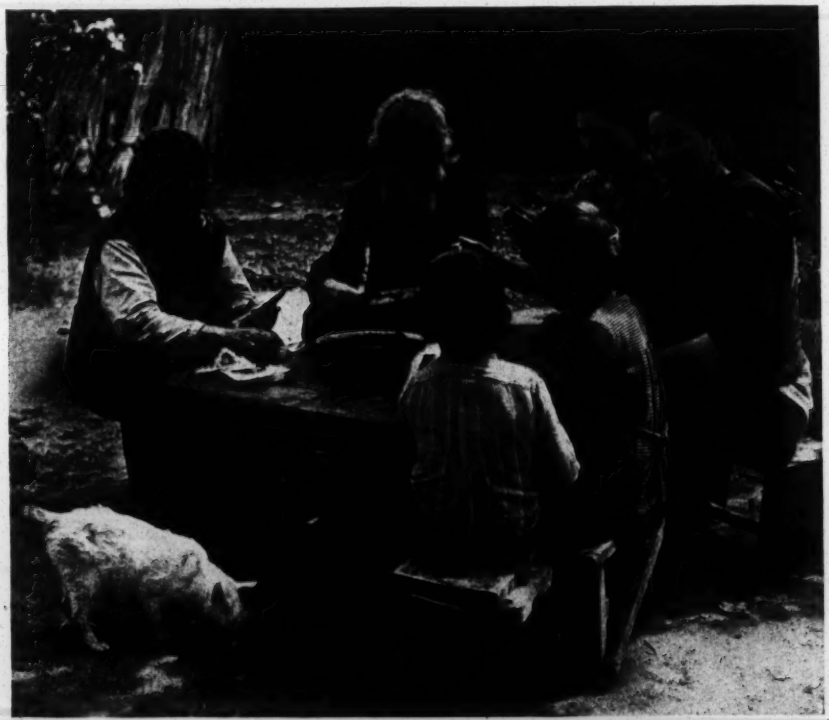

C. Anders and Co.

IN BESSARABIA, AS ELSEWHERE, WAR SLICES MEN FROM THE FAMILY CIRCLE

Though grandfather and grandson remain at home, the men of the middle generation are away at war or at work. In the delta of the Danube River at the southernmost edge of Bessarabia, many a family must sit down to dinner without the head of the household. The fisherman's typical meal consists of thick slices of bread and a fish chowder which everyone eats from one central bowl. There is always a morsel of fish for the cat. In this timberless marshy region between river and sea, families who cannot afford wooden houses build windowless tent-shaped shelters of marsh reeds (left background). Most activities, like the picnic-style meals, must be outdoors in this section of Romania (Bulletin No. 1).

GEOGRAPHIC SCHOOL BULLETIN

HOW TEACHERS MAY OBTAIN THE BULLETINS

The Geographic School Bulletins are published weekly throughout the school year (thirty issues) and will be mailed to teachers in the United States and its possessions for one year upon receipt of 25 cents (stamps or money order); in Canada, 50 cents. Originally entered as second-class matter January 27, 1922; re-entered as of April 27, 1943, Post Office, Washington, D. C., under Act of March 3, 1879. Copyright, 1944, by National Geographic Society, Washington, D. C. International copyright secured. All rights reserved. Quedan reservados todos los derechos.

Bumper Bessarabia on Romania's Give-and-Take Frontier

SWOLLEN on her eastern front by German allotments of land taken in 1941 from the U.S.S.R., Romania is facing a territorial showdown in the north as Soviet armies pound their way westward from reconquered positions in the Ukraine.

In the path of the Russians' recovery drive are two formerly Russian territories: the narrow wedge of Trans-Dniestria, a slice of the Ukraine outlined by the Dniester River and the Bug; and the wider wedge of Bessarabia, between the Dniester and the Prut (Pruth), a shock-absorber battleground for centuries.

Trans-Dniestria was hacked out of the U.S.S.R.'s Ukraine in 1941 by Romanian and German troops to give Romania the Black Sea port of Odessa. Flat and treeless, with hot and dry summers, this is grain-growing country, a piece of the black-soil wheat belt that makes the Ukraine a great Russian granary.

Turks Lost It to Russians in 1812

Bessarabia, a give-and-take sector, has changed hands so many times as to be called a Balkan Alsace-Lorraine. Russian before World War I, it was Romanian until 1940, when eastern Europe's upheavals pushed it over again on the Soviet Union's doorstep. In 1941 attacking German and Romanian armies took it back.

Since prehistoric times Bessarabia has figured in such struggles as a buffer and as a corridor. Across its broad open spaces between the Black Sea and the Carpathian Mountains swept migrations of "big name" tribes such as Goths, Huns, Avars, and Mongols; of less known wayfarers such as the Getae, Kumans, Ugrians, and Bessi. The Bessi, now vanished, left their name to the area.

While nations fought over the land, there was little colonizing. After three centuries under Romania's Turkish rulers, the region was acquired by the Russians in 1812. Then Tsar Alexander I ordered church bells rung all over the nation to celebrate the gain of "not only new territory but also an important strategic position." Forty years later Romania regained the southern section.

Chisinau Is Capital

When the Russian Empire fell apart in 1917, a congress of citizens proclaimed Bessarabia a republic. The following year, however, Romanian forces occupied the region and declared it a part of Romania. The change was recognized by treaty between Romania and Great Britain, France, Italy, and Japan, in 1920. The United States refused to be a party to this transfer of territory. The Soviet Union never acknowledged the Romanian claim to the region, regarding it as "occupied territory" and maintaining pickets on the Russian side of the frontier.

This border region outlined between its boundary rivers has an area of some 17,000 square miles, about the size of Vermont and Massachusetts combined. First colonized extensively under Russian rule, Bessarabia is peopled now with Romanians, Ukrainians, Bulgarians, Germans, Poles, Greeks, Turks, and Armenians. Russian has been generally the language of the peasants. Jews, restricted in recent years to specified communities, are relatively numerous. The population totals about three million. This means a fairly dense settlement, with about 175 people to each square mile.

Flat and fertile, Bessarabia resembles the farming country of the American Middle West. More than 90 per cent of its rich farm land is devoted to raising crops of wheat, barley, and oats, as well as Indian corn, whose seeds were imported

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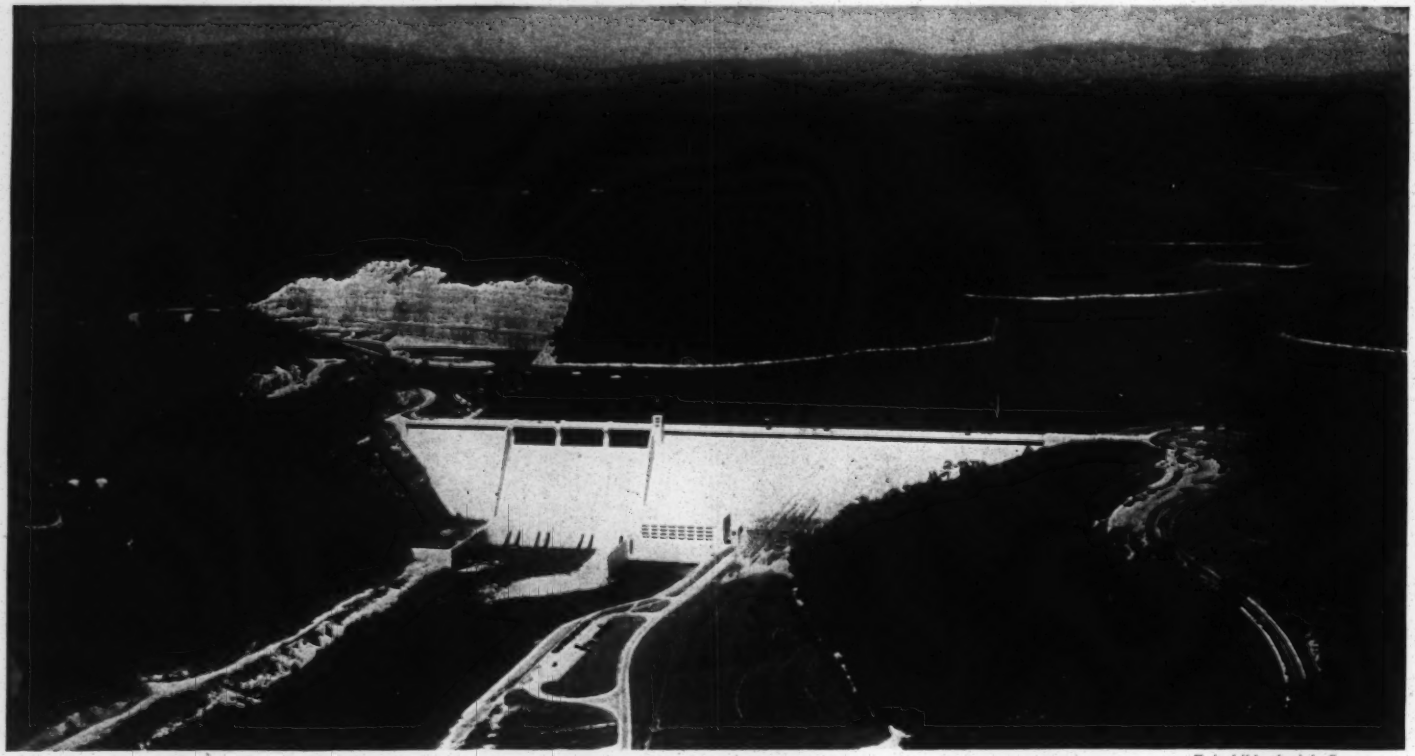

Fairchild Aerial Surveys

ONE DAM TURNS TWO RIVERS TO MANY USES AMONG TENNESSEE'S CUMBERLAND MOUNTAINS

The Norris Dam, 20 air miles northwest of Knoxville, was put into operation in 1936 as the pioneer among the new dam projects of the Tennessee Valley Authority. Built across the Clinch River (right) below where the tributary Powell empties into it, the dam backs up water in both streams. It floods their valleys to create V-shaped Norris Lake reaching 72 miles up the Clinch and 56 miles up the Powell. The dam's huge dimensions—265 feet high and 1,800 feet from shore to shore—dwarf the automobiles parked beside the approach roads (right of center). A chunk of mountain (left of center) was sliced away to supply crushed rock for the construction. The dam is serving to prevent floods and manufacture electricity to be used in the homes and industries of the Tennessee Valley and beyond (Bulletin No. 5).

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General Headquarters, Washington, D. C.

Huon Peninsula Gives Yanks Another Edge on New Guinea

AMERICAN combined land, sea, and air forces which landed at Saidor on the Huon Peninsula in North-East New Guinea have established a strategic "swivel" point in the New Guinea-New Britain war theater.

To the northwest of the peninsula lies the big Jap base of Madang. To the east, across the two straits that separate New Guinea and New Britain, is the Cape Gloucester battlefield on the latter island.

With the New Britain bases to the east, the Huon Peninsula foothold gives the Allies control of a water gateway through the Bismarck Archipelago which opens into sea lanes northward to the Philippines, and to Japan itself.

The water gate between the two larger islands consists of Vitiaz Strait on the New Guinea side and Dampier Strait on the New Britain side. The two straits are separated by Umboi Island.

U. S. Forces Put Saidor on Map

Possession of east and west posts of this gateway gives the Allies a valuable position for flanking the Japanese base at Rabaul, New Britain, and Kavieng at the northern tip of New Ireland. They are also an important forward step in the mile-by-mile struggle for the remaining Japanese-held portions of North-East New Guinea.

Saidor, the little jungle village which made world headlines with the Yank landing, is normally of so little consequence that it cannot be found on even very detailed maps. Its recent entry into the news marks its first appearance on the international scene.

Near by, however, some coconut and rubber plantations were operated in peacetime. The 300 acres of rubber trees in the district are hailed as the first to be retaken from the Japanese.

The Saidor sector is part of the Maclay Coast on the northern shore of blunt Huon Peninsula. In this rugged region mountains which rise abruptly from the sea alternate with flat, grassy coastal plains, mosquito- and malaria-ridden. In places rolling green hills slope gradually up from the sea into heavily wooded mountains. Much of the time the high peaks are hidden in clouds. Through their deep jungle valleys cascade swift rivers.

One of New Guinea's three largest rivers, the Markham (Wussi) (illustration, next page) rises in the Finisterre Mountains, in the western part of the Huon Peninsula. Draining their southern slopes, it curves down the northern slopes of the Kratke Mountains and the southern slopes of the Rawlinson range. Two or three miles west of Lae, it enters Markham Bay, the northwest corner of Huon Gulf. Constantly shifting shoals, changing shapes of islands, and a swift current make navigation almost impossible on the Markham.

Mountains Namesakes of Victorian Statesmen

From the interior of New Guinea several mountain ranges reach eastward into Huon Peninsula. These include the Finisterre, Saruwaged, and Rawlinson ranges. Mount Schopenhauer, named for the German writer much admired in the 19th century, rises more than 12,000 feet in the Finisterre range. Mounts Gladstone and Disraeli, reaching 11,000 feet in the same range, commemorate British statesmen of Queen Victoria's reign.

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from across the Atlantic.

Sugar beets, soybeans, potatoes, grapes, plums, and other fruits are also grown in quantities, and formerly represented a large proportion of Romania's available supplies. A fourth of the Romanian tobacco crop came from there. Bessarabian barley and oats particularly were important items on the list of Romanian exports to Germany, the country's No. 1 customer.

Rural in character, Bessarabia is generally backward in farm methods (illustration, below). It is handicapped by lack of transport facilities. Romania's main trunk rail lines do not run through Bessarabia; roads are poor, ports undeveloped.

Chisinau (Kishinev), the capital, has a population of more than 100,000, largely Jewish and Armenian. Near-by Tighina (Bender) was a Genoese settlement in the 12th century. It still has architectural ruins that recall Turkish rule.

NOTE: Bessarabia may be located on the National Geographic Society's Map of Europe and the Near East. A price list of maps may be obtained from the Society's headquarters in Washington, D. C.

For further information on Bessarabia and Romania, see "Caviar Fishermen of Romania," in the *National Geographic Magazine* for March, 1940*; and "Spell of Romania," April, 1934*. (*Issues marked with an asterisk are included in a special list of magazines available to teachers at 10¢ each in groups of ten.*)

Bulletin No. 1, January 31, 1944.

J. Berman

ROMANIA'S PEACETIME HARVESTS WERE FAMILY AFFAIRS

Bessarabia's slow implements of scythe and rake, combined with extensive grain acres, mean that the whole family must help in the harvest. The metal-hooped wooden pitcher shows that the boy had a part-time job as water boy. The dress of these farming folk symbolizes the region's many racial strains—the woman's Slav headkerchief, the men's western-type felt hats, and the laced sandals attributed to the influence of Roman legions once garrisoned there. From their colored sashes the men hang whetstones for their scythes.

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Versatile Bismuth Helps Planes to Fly and Mirrors to Reflect

BISMUTH, rated a highly critical material for America's war industry, does its big job on a shoestring. Little more than 1,000 tons of the metal were used in the United States in the past year. In that same year American production of another important metal—steel—ran up to an estimated total of 89 million tons.

Bismuth is called on for some miscellaneous odd jobs. Most important direct use in war industry is as a tester and bender for the many miles of aluminum tubing that go into airplanes. These arteries of the plane have a significant function to perform: to feed an unfailing stream of two vital fluids, gasoline and lubricating oil, to the engines. Tube failure might easily be disastrous.

Used as "Stuffing" for Aluminum Tubes

Bismuth can help to assure perfect tubes because, combined with lead, tin, and cadmium, it makes a highly remarkable alloy that melts at a lower temperature than the boiling point of water (illustration, next page); and because it expands slightly when solidifying from the melted state. When a tube is ready to be bent into the crooked shapes that are necessary to conduct it around corners, past engine parts, and down into the heart of the plane's power plants, this melted alloy is poured into it. If there are holes in the tube, the alloy—expanding as it cools—squeezes through and forms telltale beads on the outer surface. If the tube is too weak, the cooling alloy will split it.

If the tube passes its test, it is bent while still supported by its soft but strong "stuffing" of alloy. In this way any tendency to collapse or pinch at the bending points is overcome. Bent tubes, filled with alloy, are given steam baths. The alloy melts and drains out, and can be used over and over again in the testing and bending operations.

The low-melting-point bismuth alloys save much time in the airplane industry in getting the newly designed craft into production. They can easily be cast into metal molds from full-size models. Another job is to serve as a matrix in which to mount hard metal parts. Such alloys, when molten, can even be sprayed on wooden surfaces to protect them against wear.

Helps to "Silver" Mirrors

Easy melting puts bismuth, in the form of alloys, into the fire-prevention business. The sprinkler systems with their outlets that extend from countless ceilings in factories, warehouses, and even in some office buildings and department stores, depend on bismuth-alloy plugs as metallic watchmen. Air heated by even a small fire melts out the plugs and starts water sprinkling. The melting of similar plugs sets off fire alarms.

One chore takes bismuth into every home. It is mixed with mercury to form the amalgam that "silvers" mirrors. Another amalgam of bismuth and mercury, in different proportions, is used for making self-lubricating bearings for some machinery.

Tens of thousands of pounds of bismuth find their way into medicines for the armed services and civilians. They include indigestion remedies, salves, dusting powders, and the milky-white liquid that patients drink before X-ray studies are made of their insides.

Bismuth is a grayish-white metal with a reddish tinge. The element was

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Such place names, along with many others such as Scharnhorst Point, Schneider Harbor, and Mount Cromwell, are reminders of the nations which have ruled this part of New Guinea at different times.

The German colony of Kaiser-Wilhelmsland until 1914, North-East New Guinea was, by the Treaty of Versailles, turned over to Australia as mandated territory.

When the present war hit the island, parts of the region were still unexplored, although activities of missionaries and gold prospectors in recent years had opened up considerable territory.

Great tidal waves of earthquake origin have been known to break along the northern shores of the Huon Peninsula. In 1888 one reached a height of about 35 feet.

NOTE: New Guinea is shown on the National Geographic Society's Map of the Pacific Ocean and the Bay of Bengal, which also includes a large-scale inset of New Britain and New Ireland. The entire Bismarck Archipelago is shown in a large-scale inset on the Map of the Pacific Ocean. A price list of maps may be obtained from the Society's headquarters in Washington, D. C.

See also "Treasure Islands of Australasia," in the *National Geographic Magazine* for June, 1942*; "Unknown New Guinea," March, 1941; and "Into Primeval Papua by Seaplane," September, 1929*; and these GEOGRAPHIC SCHOOL BULLETINS: "New Britain: New Step on the Road to Tokyo," January 10, 1944; "New Guinea Battlefields Leap from Jungle to Headlines," November 8, 1943; and "New Guinea to Tokyo: Pacific Path of Island Steppingstones," April 5, 1943.

Bulletin No. 2, January 31, 1944.

Dr. E. W. Brandes

NEW GUINEA'S NORTHERN HUNTERS BRING IN CANE, NOT HEADS

Contrary to a popular notion that in New Guinea's lush jungles all lurking tribes are after heads, some tribesmen bring in from forest forays more civilized and useful commodities. When an expedition of scientists from the U. S. Department of Agriculture came to the world's second-largest island in search of disease-resisting sugar cane, this saronged detachment of residents of the Markham River valley lent a helping hand. To the peaceful prewar invaders from the United States they brought generous samples of native sugar cane varieties. The right end man is sacrificing comfort for style by wearing a pullover sweater. The Sam Browne belt was a jungle fashion even before the war. The Markhamite with the tastily tied turban was well in advance of today's American hat fashions.

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Isolated Ascension, Once Dry-Land Battleship, at War Again

"A THOUSAND miles from nowhere" could be the address of the Americans stationed on Ascension Island. Official announcement recently revealed that this island in the South Atlantic has been virtually a United Nations' secret weapon since March 30, 1942, when American forces arrived to maintain a halfway station for war planes flying between South America and Africa.

The solitary mid-ocean island rises from Atlantic rollers midway between the two continents. It is about 1,000 miles southwest of Liberia, on Africa's west coast; 1,375 miles from the Gold Coast, where other American forces are stationed; 1,435 miles east of Natal, Brazil. Its nearest neighbor, well beyond hailing distance, is the island speck of Napoleon's exile, St. Helena, some 800 miles to the southeast.

The Portuguese explorer João da Nova discovered the 34-square-mile island on Ascension Day in 1501, and christened it according to the calendar. But for more than three centuries no settlers went there. When Napoleon was interned on St. Helena, Ascension was occupied by the British Navy, in 1815, largely to forestall any attempts to rescue the imprisoned ex-emperor.

A Sit-Still Battleship till 1922

The island was for more than 100 years controlled entirely by the British Navy. It was listed on Admiralty records as H.M.S. Ascension; members of the island garrison were classed as a ship's crew; the head man was a naval captain. Ascension's captain had charge of the civilian population as well as the naval supply facilities, the garrison, and the naval sanitarium maintained there for British sailors. After World War I, the Navy evacuated the island, to save maintenance costs of nearly a quarter-million dollars, and left it to be governed as a subsidiary of the colony of larger St. Helena.

The chief value of Ascension has been as a mid-ocean post over which to loop the lines of South Atlantic submarine cables. A cable network radiates from Ascension to Sierra Leone on the coast of West Africa, to Capetown in South Africa by way of St. Helena, and to Rio de Janeiro in Brazil.

Before the island was turned into a war planes' perch, the population consisted of the staff of the cable company, their families, and some 150 workmen and servants recruited from St. Helena and Liberia.

Volcanic Home of Terns and Turtles

From the sea, Ascension has the appearance of a barren platform with a ragged skyline marked by some forty cones of extinct volcanoes. The tallest cone, rising to 2,820 feet, is high enough to wear a green cap of vegetation and deserve its title of Green Mountain. Because of the perpetual drought, there is practically no plant life on the lower levels.

Volcanic action heaped up huge piles of lava and cinders and ash to build the island, in fairly recent geologic times. Several generations of patient British seamen experimented until they found vegetation that could hold its own on the rough cinder sides of Green Mountain. Palms, bamboo, and other tropical trees and shrubs were transplanted from Australia and from the Kew Botanical Gardens in England. These mountaintop plantations have been successful in increasing the moisture which Green Mountain is able to scrape from clouds floating above on

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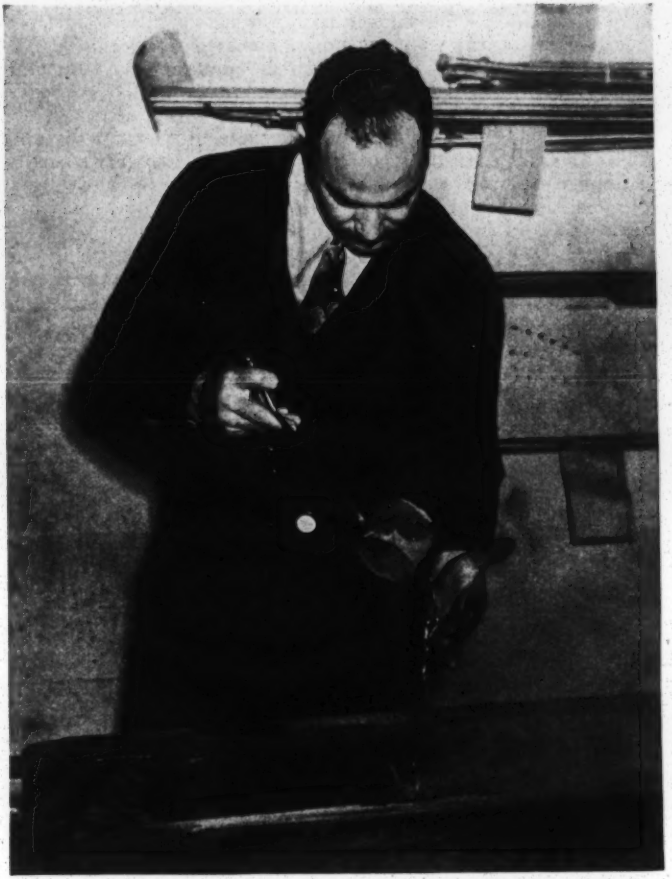
discovered in 1450. Instead of being attracted by a magnet, bismuth is repelled, and so is classed scientifically as "diamagnetic." It is the most diamagnetic substance known. It conducts heat less readily than any other metal except mercury.

Most of the bismuth used in the United States is obtained as a by-product from the smelting of copper, lead, silver, and gold. More than half the domestic supply comes from United States smelters, most of the rest from smelters in Peru. Bismuth ores are mined in Bolivia, Australia, and northern Europe.

NOTE: For additional information on metals and their uses in war and peace, see "Metal Sinews of Strength," in the *National Geographic Magazine* for April, 1942.

Bulletin No. 3, January 31, 1944.



Consolidated Aircraft Corp.

BISMUTH ENJOYS HOT WATER—ESPECIALLY GETTING THE AXIS INTO IT

The low-melting-point bismuth alloy—compounded of bismuth, lead, cadmium, and tin—melts like chocolate at a temperature lower than that at which water boils. It can be kept fluid as mercury when submerged in a tank of steaming water. You can ladle some up and pour the molten metal over your bare hand; the hot metal rolls off mercury-like without causing a burn. But the Axis nations get burned down with this alloy's aid, since the metal serves in the process of testing and bending aluminum tubing for the gasoline and oil lines of airplanes.

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Geo-Graphic Brevities

BERDICHEV, "RUSSIAN JERUSALEM," WAS CONRAD'S BIRTHPLACE

BERDICHEV, railroad city of the western Ukraine recently captured by Russian troops, is an unrecognized benefactor of the English-speaking world. It is the birthplace of Korzeniowski, whom readers know as Joseph Conrad. Son of Polish parents, Conrad was uprooted from the city when his father was banished for revolutionary activities. He learned English as a seaman on British ships, where his adventures inspired *Typhoon, Lord Jim,* and *The Nigger of the Narcissus.*

Berdichev is important to the U.S.S.R. for its railroad to Zhitomir, 30 miles to the north, and to Kiev 120 miles northeast. Before the war it had a brisk trade in grain, cattle, and horses, and had extensive munitions plants, tobacco factories, iron works, and leather, sugar, dye, and soap industries.

Berdichev, on the high right bank of the Teretev River, is provided with ready-made air-raid shelters of prehistoric origin. The maze of tunnels and caverns below the city once would have had a total length of 260 miles.

Before World War I Berdichev was one of two Jewish "capitals" of Russia. The whole population was Jewish except officials, troops, and police. It was often called the "Russian Jerusalem." The city was developed largely by Jews from Poland. They manufactured jewelry, tobacco products, and perfumes for peddlers who were 19th-century Europe's walking department stores. During fairs, when hawkers came to buy stock, 100,000 people often jammed the city.

Berdichev in Tsarist days belonged to the Radziwill family, whose palace became a Soviet hospital. A landmark is the former monastery of the "Barefooted Carmelites," a fortified structure built in 1627.

NOTE: Berdichev is shown on the Society's Map of the Near East.

* * * * *

TVA GEOGRAPHY-MAKERS TURN TENNESSEE RIVER TO LAKES

WHEN the Kentucky Dam, near Paducah, Kentucky, is completed this spring, the Tennessee River will become a river in name only. Actually it will be a series of lakes created by nine of the 29 dams of the Tennessee Valley Authority. Only the last 23 miles of the lower Tennessee, before it empties into the Ohio, will remain a flowing river.

Kentucky Dam will back up the Tennessee's waters in a 184-mile-long lake reaching across two States to Pickwick Dam in southwestern Tennessee. From Pickwick Dam to Knoxville successive dams make an eight-step staircase of lakes. Locks at each step provide a continuous nine-foot-deep navigation channel to Knoxville. This Tennessee city, far inland at the west base of the highest mountains in the eastern United States, more than 1,650 miles from the mouth of the Mississippi, will have an outlet to the sea.

TVA is making over geography in the seven States of the Tennessee basin. There are 19 dams on the Tennessee's tributaries and 9 on the main stream. The 29th dam is located on a near-by branch of the Cumberland River. Highest dam is nearly completed Fontana, on the Little Tennessee River in western North Carolina; it is 460 feet high. Kentucky Dam, 8,650 feet across, is the widest.

The "Great Lakes of the South," as TVA's 29 long, narrow reservoirs have

trade winds. Now there is a limited water supply, and a small fruit and vegetable farm exists on the mountain. For the garrison of the U. S. air base, however, both food and water must be imported.

A half-dozen bays indent the island's 22-mile circumference. On the west coast overlooking Clarence Bay stands Georgetown, the principal settlement. Near by is a country club with a golf course. To the northeast is old Fort Thornton, with relics of Victorian cannon.

In the nesting season, which occurs four times every three years, myriads of the sea birds known as sooty terns (illustration, below) lay their eggs on the bare red cinder-covered lowlands. Their nickname—wide-awakes—has given their flat nesting ground the title of Wideawake Plain. The airfield subsequently laid out on this level area inherited the Wideawake name. These sea birds are as numerous as in the days when the British naturalist, Charles Darwin, saw them.

Ascension is the homeland also of hordes of giant green sea turtles. Between November and April, their breeding season, turtles frequent the island's beaches and lay their eggs in the warm sand. An old custom observed during the British Navy's rule was to ship Ascension Island turtles each year to the British Royal Family. Many are captured and penned in small ponds on the island, to await their turn to appear as soup.

NOTE: Ascension Island is shown on the Society's Map of the Atlantic Ocean.

For further information about Ascension Island, see "At Home on the Oceans," in the *National Geographic Magazine* for July, 1939*, and "Sindbads of Science," July, 1927.

Bulletin No. 4, January 31, 1944.

Harry Pidgeon

ASCENSION'S WIDE-AWAKES KNEW PRE-PLANE AIR ATTACK AND LANDING FIELDS

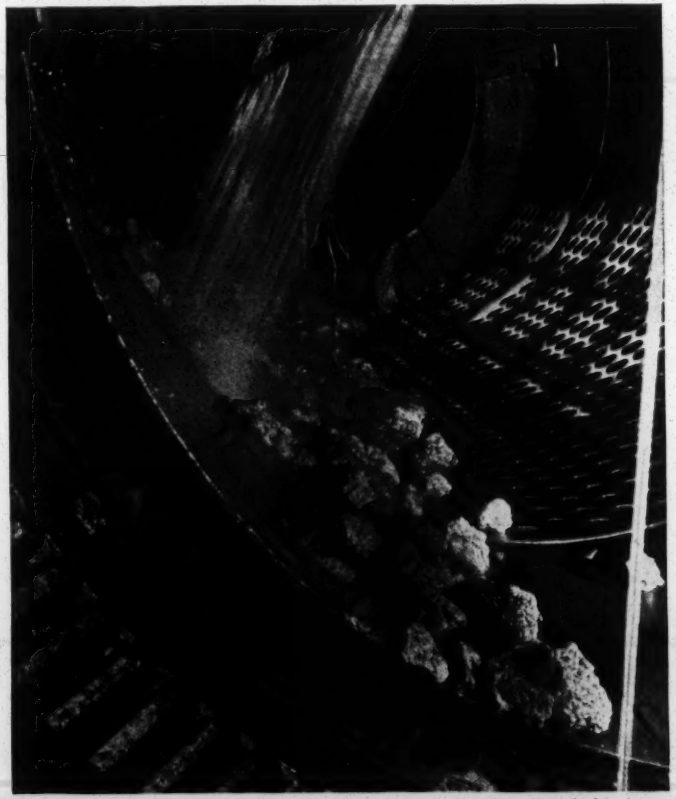
Now a landing spot for the transatlantic trips of fighting planes, Ascension for centuries has been one big landing field for sea birds that congregate there to hatch their eggs. The birds, for long without enemies against which the young would need protection, lay their eggs unconcealed on the bare earth (above). Ascension's human inhabitants since 1815 have found bird eggs one of the island's few food resources (the birds being inedible). When alarmed the birds stage air raids, wheeling above the disturber and attacking with beak and claw. These sooty terns, also called wide-awakes, all nest facing in the same direction—head into the wind. When the birdlings have hatched and learned to fly, the entire bird colony of millions will fly away from the island and remain in their sea haunts until the next nesting season some eight months later.

been called, will have an area of 1,107 square miles. Norris Lake is the most accessible and best-equipped TVA recreational spot (illustration, inside cover).

Wilson Dam, in the Muscle Shoals area of northern Alabama, is where TVA started by taking over the existing dam and the World War I Muscle Shoals nitrate plants. Since May, 1933, the TVA's many enterprises have provided a navigation channel, aided flood control, fought soil erosion, produced fertilizer to enrich farm land, and combated malaria. Electricity created in TVA power plants has improved living conditions by bringing light and electric equipment to homes and farms. It has powered production of war materials in phosphate furnaces, shipyards, aircraft factories, spark-plug factories, steel mills, and powder plants. A large part of the aluminum produced in the United States is turned out with the aid of TVA electricity (illustration, below).

NOTE: The region affected by the dams of the TVA may be located on the Society's Map of the United States.

Bulletin No. 5, January 31, 1944.



Aluminum Co. of America

A BATH STARTS BAUXITE ON A CINDERELLA CAREER

Aluminum is earth's commonest metal, but it occurs so tightly entwined with other elements that lightning bolts of electricity are necessary to blast them apart. To make one pound of aluminum takes more electricity than the average household uses in days. One of TVA's electrical jobs is to transform ore into aluminum for planes. At one time four-fifths of the aluminum made in the U. S. came from plants powered by TVA. Bauxite, the most commonly used ore, is first washed and sorted in a perforated revolving drum (above). Then it is treated with cryolite and shot through with electricity to free the gleaming silvery metal from the dull dirtlike ore.